

7. A reactor system for deposition of diamond films from a gaseous phase in a plasma of a microwave discharge, which system contains a microwave generator, a transmission line ending with a quasi-optical electrodynamic system, a reaction chamber with a substrate on a substrate holder placed in the chamber, and a system for pump-in and pump-out of the selected gaseous mixture, the improvement which comprises a quasi-optical electrodynamic system with four concave mirrors focused together towards the plasma and adapted to form a standing microwave in an area ~~selected in a vicinity~~ near the surface of the substrate, and the transmission line is a circular waveguide with corrugation of its internal surface, which is supplemented with a plane mirror system ~~to~~ that transfers therefrom at least four Gaussian beams to the concave mirrors of the said quasi-optical electrodynamic system, so that the four beams are focused towards the plasma.